

Patent Claims

1. Process for determining the pharmacological effect of
5 a substance on the activity of various biological
target molecules, wherein a substance is applied to
test cells which contain one or more biological
target molecules and the effect of the substance on
the activity of the target molecules is determined,
10 characterised in that in one operation a defined
amount of a test substance
- a) is applied to test cells with the same basic
biological constitution which differ in that they
15 contain one or more different biological target
molecules; and/or
- b) is applied to test cells which contain one or
more biological target molecules, the cells differing
20 in that they have different basic biological
constitutions, and
- i) the effect of the substance on the or each
biological target molecule is measured using a
25 detection system coupled to the activation of the
target molecule; and/or
- ii) the effect of the substance on different
regulatory mechanisms triggered by the activation of
30 the target molecule is determined by measuring the
effect using a plurality of detection systems each
coupled to the different regulatory mechanisms,
and the effects of the test substance on the
different test cells or the effects determined using
35 different detection methods are directly compared
with one another.

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- 5 2. Process according to claim 1, characterised in that a plurality of substances, optionally in several dilutions, are applied in parallel to one or more sets of cellular substrates, each set constituting a group of different assays or assay formats based on the same starting cell.
- 10 3. Process according to claim 1 or 2, characterised in that the test cells are mammalian cells.
4. Process according to claim 3, characterised in that the test cells are human cells.
- 15 5. Process according to one of the preceding claims, characterised in that the test cells endogenously express the target molecule in question.
- 20 6. Process according to one of claims 1 to 4, characterised in that the test cells are transformed with the DNA coding for the target molecule in question.
- 25 7. Process according to one of the preceding claims, characterised in that the substance is also applied to control cells which do not contain the target molecule in question and the effect of the test substance on the test cells is compared with their effect on the control cells.
- 30 8. Process according to one of the preceding claims, characterised in that the target molecule is a receptor.
- 35 9. Process according to claim 8, characterised in that the receptor is a tyrosinekinase.

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10. Process according to claim 9, characterised in that the receptor is the EGF receptor.
- 5 11. Process according to claim 9, characterised in that the receptor is HER2.
12. Process according to claim 9, characterised in that the receptor is the HGF receptor.
- 10 13. Process according to claim 9, characterised in that the receptor is KDR.
14. Process according to claim 8, characterised in that the receptor is a G protein-coupled receptor.
- 15 15. Process according to claim 14, characterised in that the receptor is a neurokinin receptor.
- 20 16. Process according to claim 14, characterised in that the receptor is a serotonin receptor.
17. Process according to one of claims 1 to 7, characterised in that the target molecule in question is an intracellular component of a signal transmission pathway.
- 25 18. Process according to claim 17, characterised in that the target molecule is a protein kinase.
- 30 19. Process according to claim 17, characterised in that the target molecule is ras.
20. Process according to claim 17, characterised in that the target molecule is raf.
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21. Process according to one of claims 1 to 7,
characterised in that the target molecule in question
is a molecule which participates in apoptosis.
- 5 22. Process according to claim 21, characterised in that
the target molecule is bcl-2.
23. Process according to claim 1, characterised in that
the test cells contain a reporter gene under the
10 control of a regulatory sequence which responds to
the change in the concentration of a messenger
substance of a signal transmission pathway, of which
the target molecule in question is a component, and
that the effect of the test substance on the target
15 molecule is determined in a change in the expression
of the reporter gene.
24. Process according to claim 23, characterised in that
the reporter gene is luciferase.
- 20 25. Process according to claim 23, characterised in that
the reporter gene is Green Fluorescent Protein.
26. Process according to claim 1, characterised in that
25 test cells which are dependent on a growth factor for
their proliferation are cultivated in the presence of
the growth factor and the effect of the substance on
the cells is determined by directly or indirectly
measuring the apoptosis or the proliferation of the
30 cells.
27. Process according to one of the preceding claims,
characterised in that it is carried out in the High
Throughput Format.
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